University of Agronomic Sciences and Veterinary Medicine of Bucharest
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Research on the establishment of a pear organic orchard in Palanca, Prahova County

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Introduction

○ The idea to set up a micro-orchard came from the desire to produce Romanian pears on a relatively small area, applying both modern technologies (planting in a super-intensive system; using trellis to direct them) and classical or empirical (works of care, how to obtain and apply treatment)

Objectives

- The main objective of this study was the research on the establishment of an organic pear orchards in Rafov, Palanca village, Prahova county.
- Four Romanian varieties multiplied *in vitro* on their own roots were planted, setting up a micro-orchard in an organic certified vegetable farm (Nasul Rosu, Prahova county)

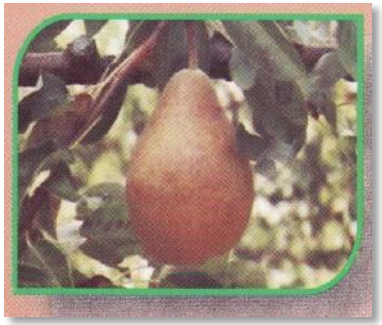
Secondly Objectives

- Adaptability of the four pear varieties in an organic vegetable farm
- Bi-baum crown formation
- Personalization of a culture technology, influenced by the organic system

Materials and methods

- The research project took place within the Nasul Rosu farm, an organically certified vegetable farm from the spring of 2019 after two-year transition period.

- I chose as study material 4 cultivars of Romanian pears (Orizont, Cristal, Euras and Corina); multiplied in vitro on our own roots.



Activities in micro-orchard

- Land preparation
- Planting
- Install support system
- Care work

Planting..

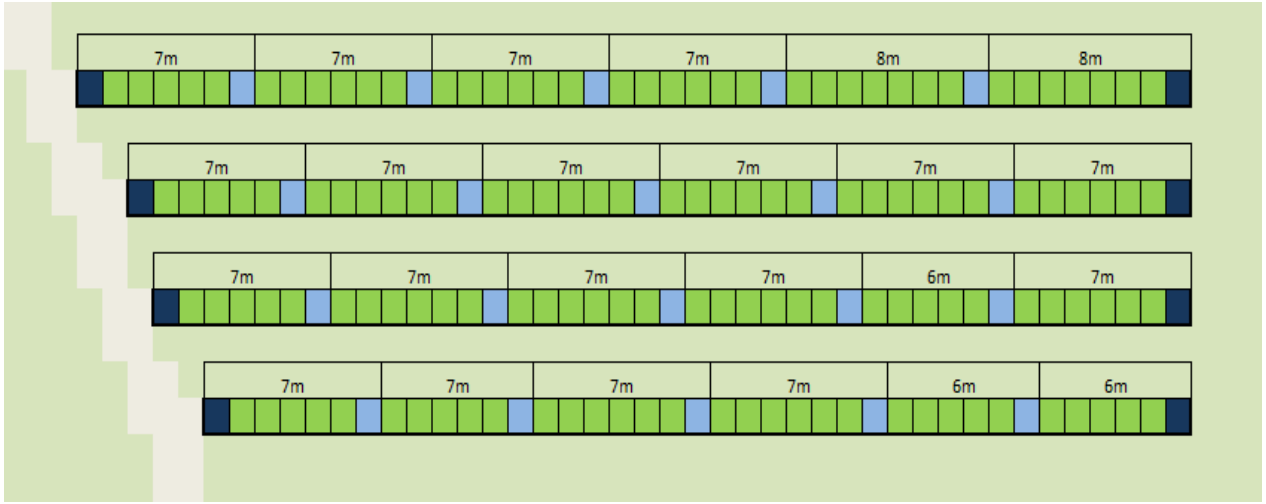
- 4 rows of trees were planted, each of them with a variety: Orizont, Crystal, Corina and Euras.
- The planting plan provided the distance of 2.5m between rows and 1-1.2m per row.
- The Rows have lengths between-38 - 44m

Pruning

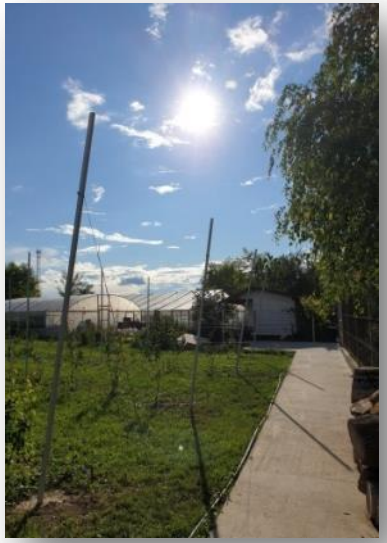
Spring pruning (tree before and after pruning)

Support system

- The support system consists of iron poles and galvanized wires with a thickness of 2.5 mm.
- 7 poles were installed on each row, of which 2 end and 5 intermediates, positioned at distances of 6-8 meters between them.



Support system



Results and discussions

1. The main phenophases of pears in the period January – May 2020

	Foto 1	Foto 2
BBCH00 – mugurii mici și cei vegetativi sunt în repaus vegetativ total și au culoarea solzilor maro-închis; Data = 24/01/2020	Cristal	
BBCH01/BBCH51– dezmugurire (mugurele se umflă și plesnește; se poate observa între solzi culoarea galben verzui) Data: 21/02/2020 ; 10/03/20202	Cristal	

1. The main phenophases of pears in the period January – May 2020

BBCH03/BBCH52 – la finalul dezmuguritului spre partea superioară a mugurelui apar frunzulițele pubescente (acele frunzulite acoperite cu fire fine)
Data: 13/03/2020

Cristal

BBCH07/BBCH53– apar primele frunze verzi;
Data: 17/03/2020

Orizont

1. The main phenophases of pears in the period January – May 2020

BBCH09 – deasupra solzilor de pe muguri își fac apariția primele frunzulițe de aproximativ 0,5 cm; Data: 20/03/2020	
BBCH10/BBCH54 – Etapa în care apar urechiușele de șoarece; frunzulițele au aproximativ 1cm și își fac apariția în partea superioară a solzilor; apar frunze diferențiate. Data: 6/04/2020	

Cristal

1. The main phenophases of pears in the period January – May 2020

BBCH11 – apar primele frunze;
Data: 7/04/2020

Cristal

Cristal

BBCH15 – s-au dezvoltat mai multe frunze dar nu au ajuns încă la maturitatea deplină;
Data: 10/04/2020

Cristal

1. The main phenophases of pears in the period January – May 2020

BBCH31 – se pot diferenţia axele de dezvoltare a lăstarilor; se poate observa începutul creşterii lăstarului;
Data: 10/04/2020

Orizont

BBCH55 – Îşi fac apariţia primii boboci florali;
Data: 10/04/2020

1. The main phenophases of pears in the period January – May 2020

BBCH57-Etapa 'BUTON ROZ'; sepalele se deschid usor; petalele sunt vizipele și se alungesc; au culoarea roz;
Data: 12/04/2020

Cristal

BBCH60 – Apare prima floare deschisă;
Data: 13/04/2020

1. The main phenophases of pears in the period January – May 2020

BBCH65 – Înfloritul complet; aproximativ 50% din flori sunt deschise;
Data: 15/04/2020

Corina

BBCH69 – Sfârşitul înfloritului; majoritatea petalelor s-au scuturat
Data: 19/04/2020

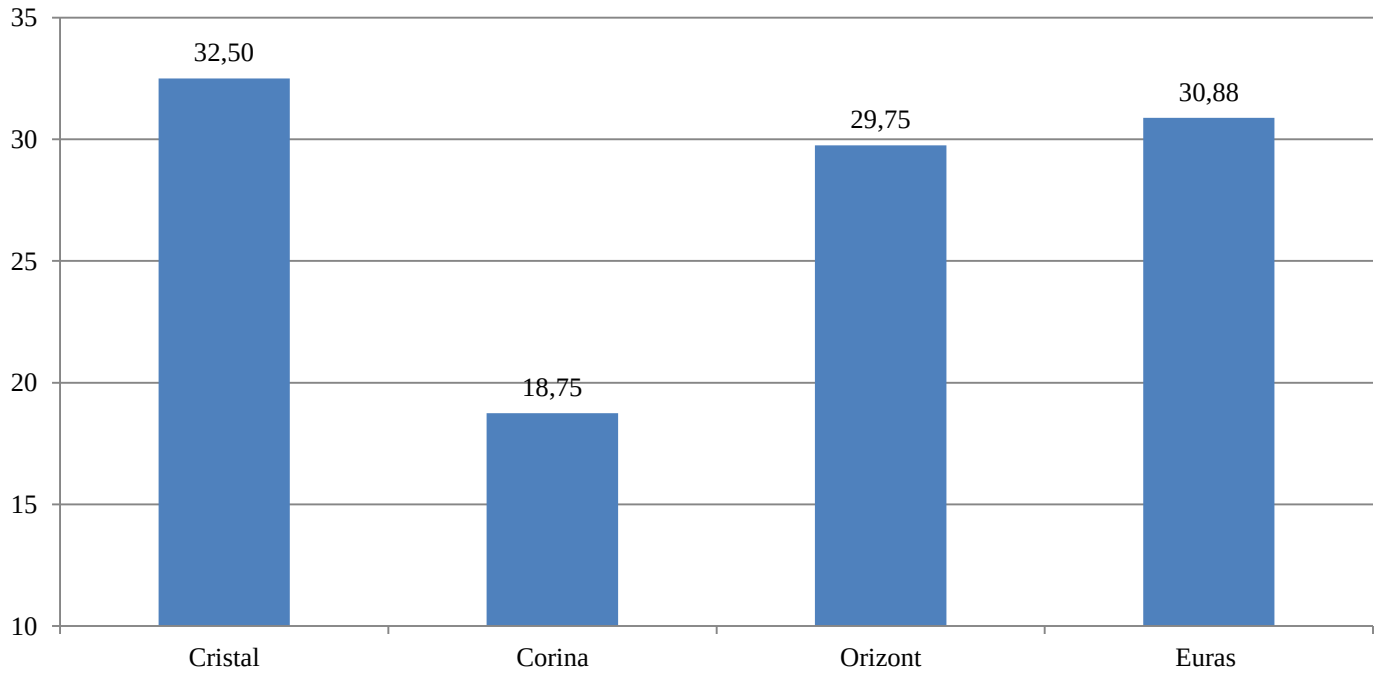
2. The influence of the applied technology on the phytosanitary condition of the trees

- From observations made between 2019 and 2020, the trees did not suffer from diseases or many pests that slow down their development.
- The only pests present were aphids.

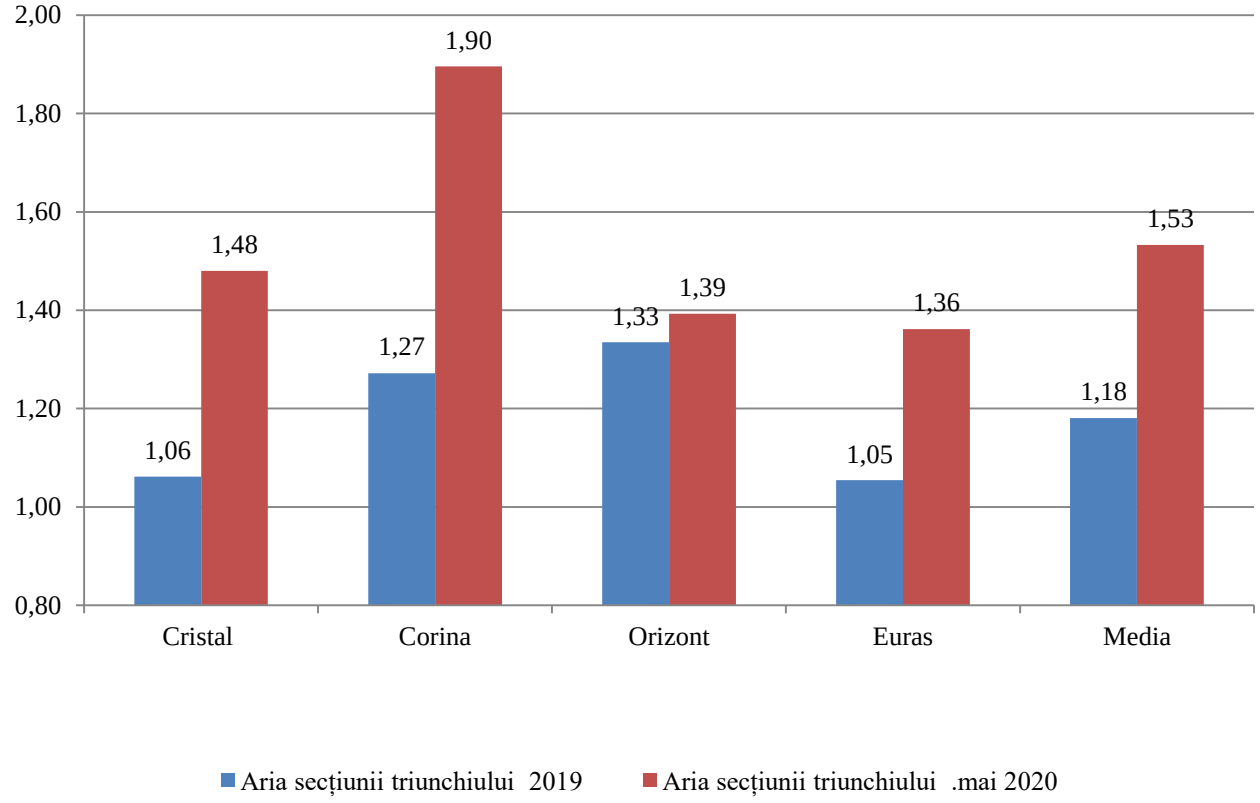
3. Bi-baum crown

Crown form at one type of tree in orchard

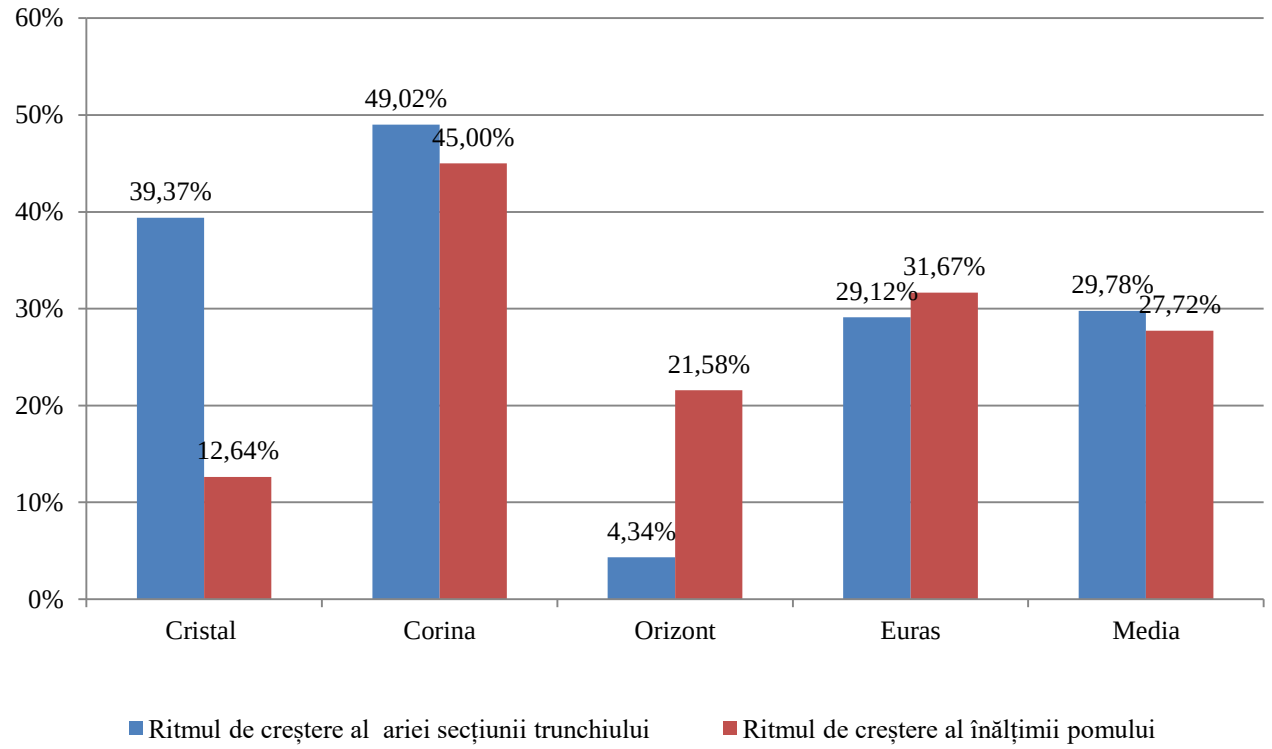
4. The influence of the cultivar on the branch angle



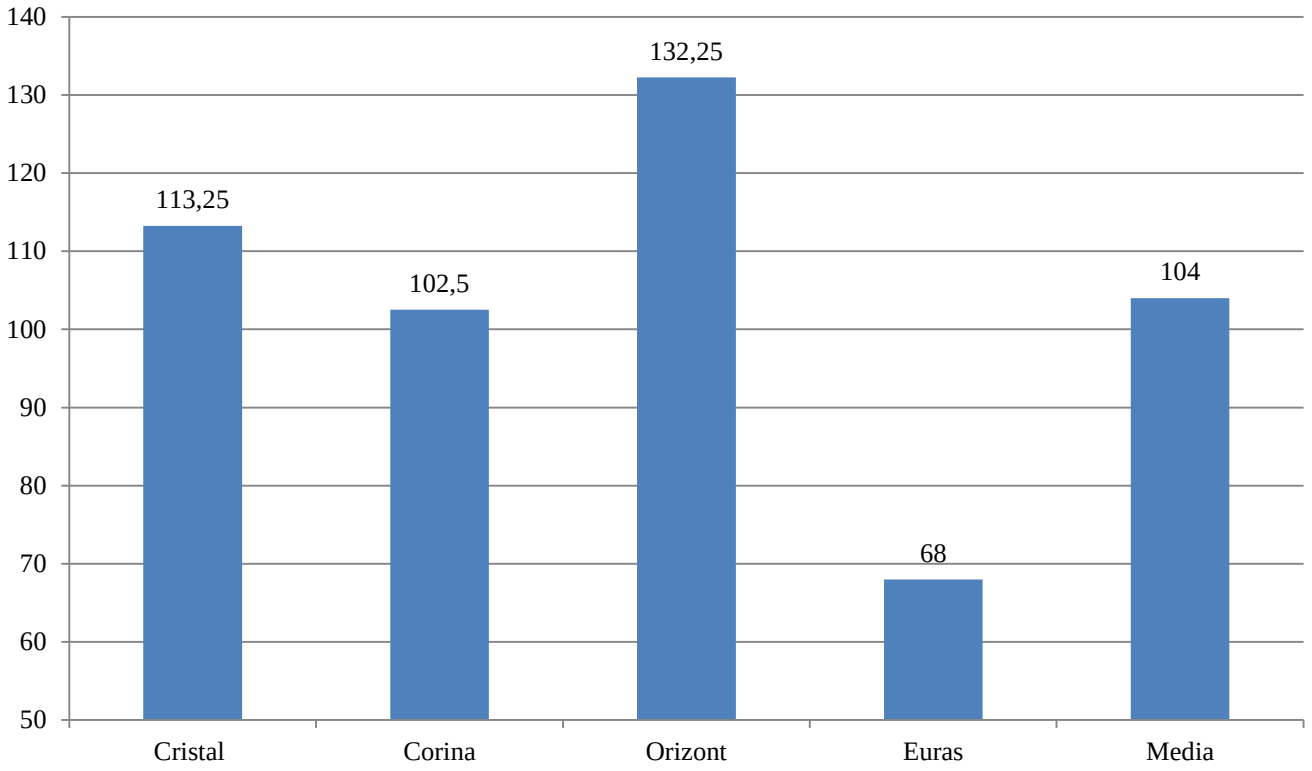
5. The evolution of the trunk section area for the four cultivars between 2019 and May 2020



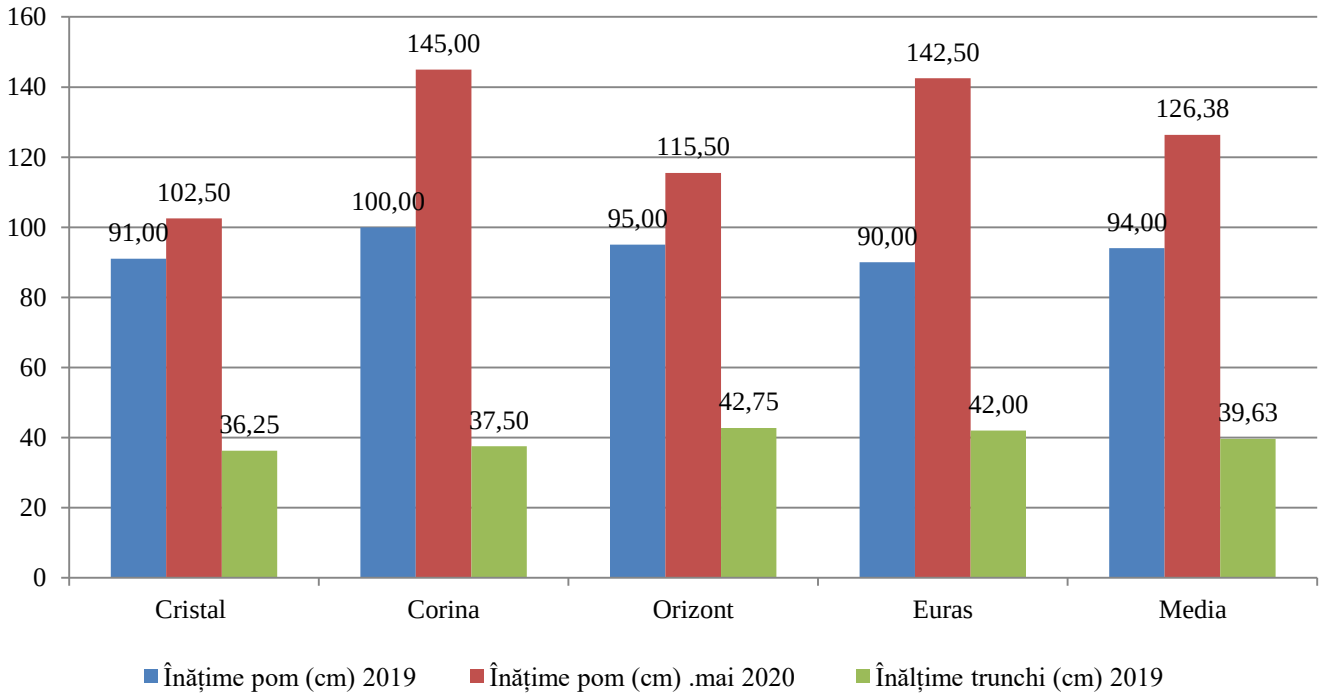
6. The evolution of the growth rate of the trunk section area and the tree height for the four varieties in the period 2019 – May 2020



7. The evolution of the annual increases for the four cultivars in the period 2019 – May 2020



8. The evolution of the height of the trunk and the tree for the four cultivars in the period 2019 – May 2020



9. Centralizing expenses for setting up mini-pears orchard in organic system

Nr Crt	Capitol de cheltuială	Materiale	Manoperă	Servicii terți	Sistem de susținere	Sistem de irigare	Total
1	Cheltuieli plantare	3681,8	380,0	800,0	-	-	4861,8
2	Cheltuieli de întreținere an I	120,4	380,0	-	-	-	500,4
3	Cheltuieli de întreținere an II	313,4	475,0	-	549,9	570,0	788,4
	Total	**4115,6**	**1235,0**	**800,0**	**549,9**	**570,0**	**6150,6**

Conclusions

○ Following the soil care work, aeration/digging on the rows where the trees were planted has a positive effect, noting that, this work for the first three rows was done on consecutive days.

Conclusions

- The work of the fourth row was carried out at a distance of about two or three weeks and because of this, the Euras cultivars (row 4) did not have such a good development in the first year.

Conclusions

- The formation of the Bi-baum crown is still ongoing, in some trees it has been possible to establish the main axes and guide them on the trellis, but in the case of some trees the second axes has not yet been fully developed, this activity will continue.

Conclusions

- The spread of biological predators both on the farm and in the orchard, has positive results, observing the mode of action against pests and the fact that the degree of attack decreases.

Conclusions

- The degree of pest attack can be considered small to medium, the main pests during this period being only aphids.

Conclusions

- Irrigation from the first year after planting, which was not continuous, led to the development of the root system.
- We can associate this with the idea of stimulating the roots through all the practices brought at the time of planting in the transposing their energy to the search for water.

Conclusions

- Regarding the cost for the establishment and care of micro-orchards throught out the period, the support system had the largest share, being indispensable for the planted trees to grow in a super-intensive system.

Conclusions

- In the orchard it can be seen that the trees that are planted on the place where the ducks worked, have a much better development than the others, which in the present, the trees assimilate the substances decomposed in that place.

Recommendations

- Application of biological predators;
- Knowledge of the type and method of insect control;
- Performing the mycorrhizal operation at planting;
- Grassing intervals between trees;
- *Planning and performing care operations and make them on the right time*.

Many thanks!